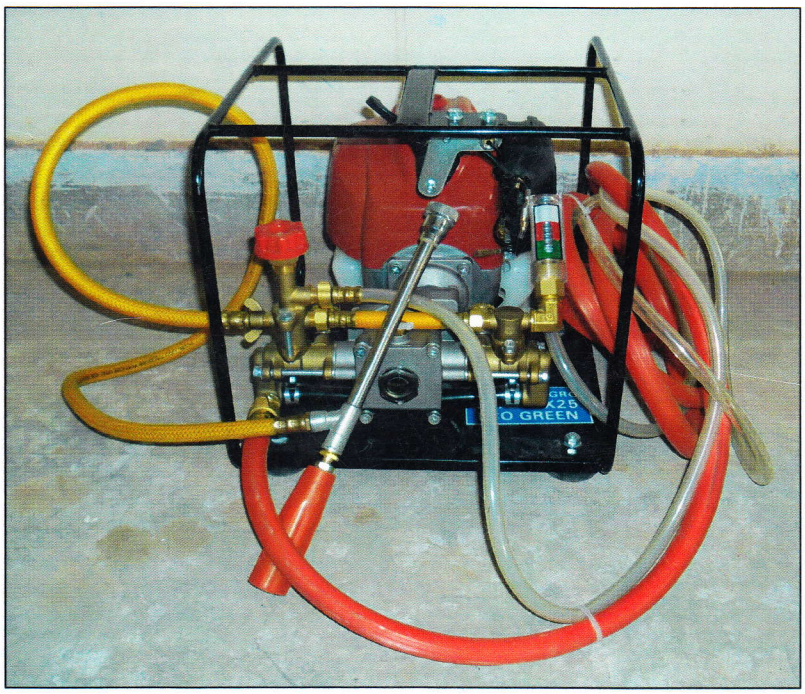
Lib.

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : PS-190/1847/2016
माह / Month: May, 2016



# HYDRAULIC POWER SPRAYER
# FORTUNE AGRO FAI-26 GX25 ECO GREEN

सत्यमेव जयते

भारत सरकार
कृषि एवं किसान कल्याण मंत्रालय
कृषि, सहकारिता एवं किसान कल्याण विभाग

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE & FARMERS WELFARE
DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE


उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
ट्रैक्टर नगर, सिरसा रोड़, हिसार-125001 (हरियाणा)

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE
TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)

दूरभाष/Phones: 01662-276172
फैक्स स0/Fax No. 01662-276984

वेबसाईट / Website: http://nrfmtti.gov.in
ई-मेल/ E-mail: fmti-nr@nic.in

| | | | |
|---|---|---|---|
| Cl. 5.16 | The engine and electric motor shall conform to the requirements as given IS:7347-1974 (Reaffirmed 2006) and IS:325-1996 (Reaffirmed 2007) respectively. | The prime mover fitted in the sprayer manufactured by Thai Honda Manufacturing Co. Ltd., Thailand make and model Honda & GX-25 petrol engine of 0.72 kW at rated speed of 7000 rpm, In pursuance of ministry's order No. 7-23/2011-M&T (I&P) dated 20.04.2011 the engine performance test as per IS:7347-1974 has not been conducted and the performance parameters as specified by the applicant have been presumed taking into consideration that the engine manufacturing company is ISO-9001:2008 certified company as is evident from the certificate registration No. 04100950498 & audit report No. SEATH-Q0095/2015 valid until 07.05.2018. | -- |
| Cl. 5.16.1 | The exhaust outlet of the engine shall be so positioned that the smoke does not directly affect the operator or crop.<br>A guard shall be provided on or near the exhaust pipe for the protection of the operator. | The exhaust outlet is provided at RHS of engine and operator is not exposed to harmful exhaust. Pipe is covered with guard. | Conforms |
| Cl. 5.17 | The fuel and chemical discharge controls shall be in easy access of the operator. | Easy accessible to the operator. | Conforms |
| Cl. 5.18 | Air pressure chamber shall with stand the test prescribed in 8.7 without any deformation or damage. | No damage found in air pressure chamber. | Conforms |
| **PERFORMANCE REQUIREMENTS<br>Cl.6. IS 11313:2007 (Reaffirmed 2012)** | | | |
| Cl.6.1 Discharge rate/Suction capacity | When tested in accordance with the method given in 8.3, the pump shall be capable of discharging/sucking a minimum of 8000 ml. water per minute at its rated speed and rated pressure. | The pump is capable to discharge 6265 ml/min without gun at 7015 rpm of engine speed and 12 kg/cm$^2$ pressure. | **Does not conform** |
| Cl.6.1.1 | The discharge rate/suction capacity shall be declared by the manufacturer. | 7.2 l/min declared in the manual of submitted by the manufacturer. | Conforms |
| Cl.6.2 Volumetric Efficiency Cl6.2.1 | When determined in accordance with 8.4.1, the volumetric efficiency of the piston/plunger type pump shall minimum 80 percent. | The volumetric efficiency is 96.20 % which is within specified limit. | Conforms |

| | | | |
|---|---|---|---|
| Cl.6.2.2 | The volumetric efficiency requirement for roller vane type pump shall be minimum 80%. | Not applicable | -- |
| Cl.6.3 Power requirement | When tested in accordance with the method given in 8.5, pump shaft power requirement shall not be more than that of the value declared by the manufacturer. | Not applicable | |
| Cl.6.4 Maximum achievable pressure | When tested in accordance with the method given in 8.7, maximum achievable pressure shall not be less than that of the value declared by the manufacturer. | Maximum achievable pressure observed as 25 kg/ $cm^2$ with gun against the declaration of 30 to 35 $kg/cm^2$. | Conforms |
| Cl.6.5 Endurance test | Sprayer shall withstand the endurance test specified in 8.8 and the variation in Discharge rate between first and last observation shall not be more than ± 5 Percent. | Endurance test of 50 hrs. completed without any breakdown & the variation in pressure. Percentage variation in discharge is 1.07% with in specified limit (see annexure IV for more details). | Conforms |
| Cl. 7 | **OTHER REQUIREMENTS**<br>**IS:11313:2007 (Reaffirmed 2012)** | | |
| Cl. 7.1 | Each sprayer shall be provided with parts catalogue and manual giving detailed information about sprayer, engine, its rated speed along with operational and maintenance instructions and safety precautions. | Manual and parts catalogue is provided by the manufacturer and found adequate in contents. | Conforms |
| Cl. 7.2 | Each sprayer shall be provided with a set of necessary tools, suction strainer having aperture size of 300 µm to 425 µm and a measuring jar for lubricating oil. | One set of rubber rings, toolkit measuring jar is provided. | Conforms |
| Cl. 7.3 | On the option of the purchaser, the following accessories shall be supplied | | |
| a) | A set of spray nozzles (conforming to Annexure-F of IS:3652-1995 (Reaffirmed 2006) for different discharge rates, and | Not applicable | -- |
| b) | Spray gun conforming to Annexure-E of IS:3652-1995 (Reaffirmed 2006). | Provided | Conforms |
| Cl. E 1 Types IS:3652:1995 | The spray guns shall be of the following two types: | | |
| | a) Trigger type | N.A | -- |
| | b) Screw type | Screw type | Conforms |
| Cl. E 2 Dimensions Cl. E 2.1 | The thickness of the wall of the barrel shall be minimum of 0.63 mm. | 0.70 mm | Conforms |
| Cl. E 2.2 | The diameter of the connecting rod shall be minimum of 5 mm. | 6.30 mm | Conforms |

| OTHER REQUIREMENT<br>(Cl. E4) | | | |
|---|---|---|---|
| Cl. E 4.1 | The farthest point of the trigger in case of the trigger type shall be at a distance not exceeding 100 mm (to facilitate convenience grip by hand) when the valve is in closed position when the trigger is pressed for full discharge it shall have a minimum clearance of 10 mm from the barrel tube. | Not applicable as trigger type cut off device is **not provided.** | -- |
| Cl. E 4.2 | A lock for locking the trigger in different positions to attain different spray patterns shall be provided. | Not applicable | -- |
| Cl. E 4.3 | The total mass of the spray gun having a length upto 1000 mm shall not exceed 1.6 kg. | Total mass of the gun provided is 0.302 kg. | Conforms |
| Cl. E 5 Designation Cl. E 5.1 | The gun shall be designated by its identification mark AG-C-J for fine cone spray and jet spray pattern, spray angle and discharge at a nominal pressure of 600 kPa. | Not marked | **Does not conform** |
| Cl. E 6 Marking | Each gun shall be marked with the following particulars | | |
| | a) Manufacturer's name or recognized trade mark, and | Not marked | **Does not conform** |
| | b) Batch or code no. | Not marked | **Does not conform** |
| Cl.9 | **WORKMANSHIP AND FINISH**<br>**Cl.9 IS: 11313-2007 (Reaffirmed 2012)** | | |
| Cl. 9.1 | All the components of the sprayer shall be free from burrs, pits and other visual defects which may be detrimental for their use. | Finishing and workman ship is Satisfactory. | Conforms |
| Cl. 9.2 | The exposed metallic parts shall have a protective coating to prevent surface deterioration. | Exposed metallic parts have the protective coating. | Conforms |
| Cl.10. | **MARKING AND PACKING**<br>**Cl.10 IS: 11313-2007 (Reaffirmed 2012)** | | |
| Cl.10.1 Marking | Each sprayer shall be marked with the following particulars :- | | |
| a) | Manufacturer's name & his registered trade mark | Marked as Fortune Agro FAI-26 GX25 Eco Green | **Does not conform** |
| b) | Sl. No. and batch or code No. | Not marked | **Does not conform** |

## 6. COMMENTS AND RECOMMENDATION:-

### 6.1 Conformity to Indian Standard

Hydraulic power sprayer Fortune Agro FAI-26 GX Eco Green conforms all the clauses of IS: 11313-2007 except requirement specified in the following clause. **These should be rectified and incorporated at manufacturing level:-**

i) The prime mover fitted in the sprayer manufactured by Thai Honda Manufacturing Co. Ltd., Thailand make and model Honda GX25 petrol engine of 0.72 kW at rated speed of 7000 rpm, In pursuance of ministry's order no. 7-23/2011-M&T (I&P) dated 20.04.2011 the engine performance test as per IS:7347/1974 has not been conducted and the performance parameters as specified by the applicant have been presumed taking into consideration that the engine manufacturing company is ISO-9001:2008 certified company as is evident from the certificate registration No. 04100950498 and audit report No. SEATH-Q0095/2015 valid upto 29.07.2016.

ii) Cl. 6.1 IS: 11313:2007-Discharge rate/suction capacity of sprayer pump not conform. It should be looked into for improvement.

iii) C1.E.5 IS: 3652:1995- The spray gun is not designated by its identification mark. The corrective action should be taken to comply IS requirement.

iv) The gun does not conform the requirement of IS: 3652:1995 Cl. E-6 (a) & (b) the manufacturer's name or recognized trade mark & batch or code No. is not marked on gun. It should be marked.

v) Cl. 10.1 IS: 11313:2007 (Reaffirmed 2012) – Manufacturer's name, his registered trade mark, sr. No. and batch or code No. is not marked on sprayer. It should be provided on each sprayer.

6.2 The pressure gauge with 0.2 kg/cm$^2$ least counts with colour codes may be provided for flow & pressure adjustment during calibration of sprayer.

6.3 Identification/labeling of sprayer is not adequate. It is therefore recommended to provide the following details on labeling plate.

i) Manufacturer's name and address
ii) Make
iii) Model
iv) Serial No.
v) Year of manufacture
vi) Engine make & model
vii) Engine serial No.
viii) Engine speed recommended for use (rpm)
ix) Working pressure range (kg/cm$^2$)

6.4 Safety

i) The accessories viz mask, hand gloves and safety goggles for operator's safety has not been provided with sprayer. It is emphatically recommended to take corrective action immediately. The compliance report may be submitted to the Institute within one month time.

ii) Safety signs and hazard pictorials are not provided on the machine. it should be provided on the machine to alert person to and existing or potential hazard, identify the hazard, describe the nature of hazard, explain the consequences of potential injury from the hazard and instruct the persons about how to avoid the hazard.

iii) Safety instructions regarding handling poisonous agrochemical and first aid may also be added in operator's manual.